REQUESTING AN EXCEPTION TO PROVIDE INNOVATIVE/ALTERNATE TREATMENT

Rules Affected: Title 30 Texas Administrative Code §290.42(g)

Purpose

This document is intended as a guide for public water systems requesting an exception to provide innovative/alternate treatment. Innovative/alternate treatment is defined in Title 30 of the Texas Administrative Code (30 TAC) §290.38(36) as: "*any treatment process that does not have specific design requirements in 30 TAC §290.42(a)-(f) relating to water treatment*". This includes but is not limited to any treatment process for the removal of regulated contaminants, with the exception of reverse osmosis (RO) and nanofiltration (NF) membranes. Reverse osmosis and nanofiltration do not require an exception to provide innovative/alternate treatment. Specific engineering submittal requirements for RO and NF membranes are found in 30 TAC §290.39(e)(6) and (7), and the design requirements for RO and NF membrane systems are outlined in 30 TAC §290.42(b)(9).

Background

30 TAC §290.42(g) states that innovative/alternate treatment processes will be considered on an individual, site-specific basis as a request for an exception in accordance with 30 TAC §290.39(l). A professional engineer (PE) licensed in Texas must provide site specific pilot test data or data collected at similar full-scale operations to the TCEQ demonstrating that the proposed innovative/alternate treatment system will produce water that meets all the drinking quality standards in 30 TAC Chapter 290, Subchapter F. The pilot test data must be representative of the actual operating conditions which can be expected over the course of a year at the public water system (PWS) where the treatment will be installed. In certain cases, proof of a one-year manufacturer's performance warrantee or guarantee assuring that the plant will produce treated water which meets minimum state and federal standards for drinking water quality may be required.

Guidance

The typical exception process to provide innovative/alternate treatment is comprised of three parts:

- approval of a pilot protocol (Protocol);
- pilot testing; and,
- approval of the final pilot study report (Report).

The use of alternate site data in lieu of conducting a site-specific pilot study is discussed at the end of this guidance document. When a PWS decides to instal

innovative/alternate treatment, the first step is to hire a professional engineer (PE) licensed in Texas to assess and select an appropriate treatment solution for the system's needs. Once a prospective treatment solution is chosen, the PE submits a signed, sealed, and dated Protocol to the TCEQ for approval. The Protocol outlines the operating parameters and sampling schedules for the proposed pilot study, that will demonstrate that the treatment solution will meet the system's water quality goals and that the treatment plant will produce water in compliance with all state and federal regulations. The process for submitting the Protocol for approval is the same as any other exception request. For more information on submitting a request for an Exception to 30 TAC Chapter 290, Subchapter D rules, see the TCEQ website at:

www.tceq.texas.gov/drinkingwater/trot/exception

Submission of the Pilot Study Protocol

The Protocol for an exception request to provide innovative/alternate treatment should clearly outline:

- The specific analytes to be treated;
- Why the proposed treatment solution was selected;
- The duration of the pilot study; the pilot study operating parameters (such as flow rate, filter loading rates, pretreatment and post-treatment);
- An analysis of the raw water quality, the proposed finished water quality goals, the proposed pilot and full-scale treatment trains (including pretreatment and posttreatment);
- Onsite parameters that will be monitored and their frequency, raw and treated constituents to be analyzed by an accredited laboratory and how often; and,
- Poof that any chemicals or treatment media are certified for potable use.

Other information may be required to fully explain how and why the treatment solution will be implemented.

Below is a list of items that at a minimum should be addressed in your Protocol submission:

- A clear description of the water quality problems and why the proposed treatment solution was selected. This should include the correct PWS name, the 7-digit PWS ID number, TCEQ Source Codes and a locational description of each source to be treated, a locational description of the plant where the treatment will be piloted and installed, and the TCEQ assigned entry point (EP) that the treatment plant serves. Information on PWS inventory and facilities is available on Texas Drinking Water Watch (DWW) at:

  http://dww2.tceq.texas.gov/DWW/

- Raw water quality data (prior to chlorination) for the source(s) to be treated. This analysis shall include all the primary and secondary constituents in 30 TAC §290.104(b) and §290.105(b), as well as lead, copper, alkalinity (as $CaCO_3$), chloride, calcium (as Ca^{+2}), pH, sodium, sulfate and total dissolved solids (TDS).

- A detailed diagram of the pilot and proposed full-scale treatment trains from the raw source to the entry point of distribution. The diagrams must include the location of sampling/monitoring points, chemical addition, pretreatment filters or screens, post-treatment filters or screens, flow measuring devices, flow control valves, pump(s), adsorption media vessels operated in series, and any other equipment required to operate the treatment process. All media vessels must be labeled with their contents and sample point names should be included on the flow diagram that match the point of collection descriptions used for laboratory results.
- Information on pretreatment and pretreatment goals.
- A sampling matrix for the benchtop and laboratory samples to be collected during the pilot study. This must include sampling of daily disinfection levels and disinfectant residuals in the finished water.
- Information on posttreatment and posttreatment goals.

Conducting the Pilot Study

The TCEQ typically requires 90 days for a pilot study in order to allow time for adjustments and reconfiguration to the pilot system. The TCEQ requires at least 30 days of the pilot test to be conducted under the selected full-scale design flow rate with no major adjustments in operating parameters that may include empty bed contact time (EBCT), hydraulic loading rate (HLR), and chemical addition. The design flow rate may be changed during the pilot study provided that at least 30 days are operated under constant conditions. Failure to demonstrate operation under a continuous filtration rate (or other critical parameters) may result in either the approval to operate at the lowest HLR piloted during the 30 day steady-state period or a requirement to conduct another 30 day steady-state demonstration period.

For drinking water applications, the TCEQ requires the process media to be certified as American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61. This documentation must be submitted with the final pilot study Report to show this requirement was met.

If any chemicals are used in the treatment of the water, the chemicals must conform to the ANSI/NSF Standard 60 and be certified by an organization accredited by ANSI. Provide documentation with the final pilot study Report showing this requirement was met.

Any discharge of wastewater or disposal of other wastes from the pilot study unit must be in accordance with all applicable state and federal statutes and regulations as specified in 30 TAC §290.42(i).

Laboratory Analysis of Pilot Study Samples

All laboratory samples for the pilot study (that show the innovative/alternate treatment solution is effective) must be analyzed by a TCEQ approved laboratory with a current National Environmental Laboratory Accreditation Program (NELAP) certification. The analysis must utilize US Environmental Protection Agency (EPA) or EPA accepted standard methods for drinking water that can measure below the maximum contaminant

level (MCL) or secondary standard for each constituent, if applicable. For a list of TCEQ approved labs see the webpage at:

www.tceq.texas.gov/assets/public/compliance/compliance_support/qa/txnelap_lab_list.pdf

Submission of the Pilot Study Report

In addition to the analytical results for the sampling matrix of benchtop and laboratory samples specified in the approved Protocol, the final pilot study Report must also include:

- The Professional Engineer's signature, seal, and date.
- A restatement of the water quality problems and goals, plus a written discussion of the pilot test and the conclusions made during testing.
- Copies of the raw water quality results, the pilot and full-scale treatment train diagrams, and sampling matrix that were provided in the original Protocol.
- Proof that all wetted components and chemicals used during the pilot and proposed for the full-scale treatment system are ANSI/NSF 60/61 certified.
- Finished water quality data for corrosivity and disinfection byproducts. Laboratory results for total trihalomethanes (TTHM) and haloacetic acids (HAA5) in the finished water must be included with the final Report, as well as laboratory results for alkalinity (as $CaCO_3$), chloride, calcium (as Ca^{+2}), pH, sodium, sulfate and total dissolved solids (TDS).
- The manufacturer's specification for each flow meter used during the pilot study and proof of factory or onsite calibration.
- A list of all on-site tests conducted, test methods used, test equipment calibration methods and frequencies, and the results of each calibration test and any necessary adjustments to the test equipment.

Alternate Site Pilot Study Data

30 TAC §290.42(g) allows the use of alternate site pilot data in lieu of conducting a site-specific pilot study. The data provided from the alternate site must be equivalent to what is required by the TCEQ to approve a pilot study performed in Texas. Additionally, the raw water quality from the alternate site must be comparable or worse than the raw water quality at the proposed system and the full-scale construction of the proposed treatment train must be identical to the full-scale system in operation at the alternate site. The following items are required to be submitted for the TCEQ to consider the approval of alternate site data:

- Complete raw water quality results from the alternate site and the proposed site, including any constituents known to interfere with the given treatment process.
- Written permission from an authorized representative of the alternate site to use the data from their pilot study.
- The manufacturer's specification for each flow meter used during the original pilot study at the alternate site and proof of factory or onsite calibration.

- A list of all on-site tests conducted, test methods used, test equipment calibration methods and frequencies, and the results of each calibration test and any necessary adjustments to the test equipment from the alternate site pilot study.
- Proof that all wetted components and chemicals proposed for the full-scale treatment train are ANSI/NSF 60/61 certified.
- Finished water quality data for corrosivity and disinfection byproducts from the alternate site. Laboratory results for total trihalomethanes (TTHM) and haloacetic acids (HAA5) in the finished water at the alternate site must be included with the request to use alternate site data, as well as laboratory results from the alternate site for alkalinity (as $CaCO_3$), chloride, calcium (as Ca^{+2}), pH, sodium, sulfate and total dissolved solids (TDS).

Submission of Engineering Plans and Specifications

Once a PWS has received approval to provide innovative/alternate treatment, engineering plans and specifications for the proposed treatment train must be submitted to the TCEQ Plan Review Team (PRT). For more information regarding the submission and review of engineering plans and specifications, see the TCEQ website at:

https://www.tceq.texas.gov/drinkingwater/planrev.html

Finalized and Approved by:

5/7/18

Joel Klumpp, Plan and Technical Review Section Manager: 05/07/2018

If no formal expiration date has been established for this staff guidance, it will remain in effect until superseded or canceled.

Revision History:

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